In the Claims

1. (currently amended) A method of performing model-based optical proximity correction comprising:

providing a mask matrix having a region of interest (ROI) with a boundary;

locating a plurality of points of interest within said mask matrix;

determining a first single loop polygon having a finite geometrical shape with a plurality of vertices representative of said located plurality of points of interest; and

collapsing said first single loop polygon onto said ROI using an algorithm to form a second single loop polygon residing within said ROI to correct for optical proximity, said second single loop polygon formed by locating and determining locations of at least first and second vertices of said first single loop polygon in relation to said ROI, wherein if said locations comprise said first vertex residing within said ROI and said second vertex residing outside said ROI, the method including the steps of:

pinning said second vertex to a closest point of intersection with said boundary of said ROI using said algorithm;

assigning said first vertex to a first vertex of said second single loop polygon;

assigning said pinned second vertex to a second vertex of said second single loop polygon;

repeating said steps for all vertices of said first single loop finite geometrical shape;

generating said second single loop polygon using said assigned vertices such that all vertices of said second single loop polygon residing within said ROI.

2. (canceled)

3. (currently amended) The method of claim 1 wherein said first and second single loop polygons have identical finite geometrical shapes.

4. (currently amended) The method of claim 1 wherein said first and second single loop polygons have different finite geometrical shapes.

5. (currently amended) The method of claim 1 wherein said first and second single loop polygons have an identical number of vertices.

6. (currently amended) The method of claim 1 wherein said first and second single loop polygons have a different number of vertices.

7. (currently amended) The method of claim 1 wherein said step of determining said first single loop polygon comprises computing said first single loop polygon based on a correlation between said plurality of points of interest and said ROI.

8. (canceled)

9. (currently amended) The method of claim 1 wherein said first and second vertices are adjacent to each other, and are respectively representative of adjacent first and second points of interest of said plurality of points of interest within said mask matrix.

10. (canceled)

11. (canceled)

12. (currently amended) A method of performing model-based optical proximity correction comprising :

providing a mask matrix having a ROI with a boundary;

locating a plurality of points of interest within said mask matrix;

determining a first single loop polygon having a finite geometrical shape with a plurality of vertices representative of said located plurality of points of interest;

collapsing said first single loop polygon onto said ROI using an algorithm to form a second single loop polygon residing within said ROI to correct for optical proximity, said second single loop polygon formed by locating and determining locations of at least first and second vertices of said first single loop polygon in relation to said ROI, wherein if said location comprises said first vertex residing outside said ROI and said second vertex residing within said ROI, the method including the steps of:

pinning said first vertex to a closest point of intersection with said boundary of said ROI using said algorithm;assigning said first pinned vertex to a first

vertex of said second single loop polygon within said ROI; andrepeating said steps for all vertices of said first single loop polygon

generating said second single loop polygon using at least said assigned vertices such that all vertices of said second single loop polygon residing within said ROI.

13. (currently amended) A method of performing model-based optical proximity correction comprising :

providing a mask matrix having a ROI with a boundary;

locating a plurality of points of interest within said mask matrix;

determining a first single loop polygon having a finite geometrical shape with a plurality of vertices representative of said located plurality of points of interest;

collapsing said first single loop polygon onto said ROI using an algorithm to form a second single loop polygon residing within said ROI to correct for optical proximity, said second single loop polygon formed by locating and determining locations of at least first and second vertices of said first single loop polygon in relation to said ROI, wherein if both said first and second vertices reside outside said ROI the method including the steps of;

determining a region of said mask matrix wherein said location of said first vertex resides; pinning said first vertex to said boundary of said ROI based upon said region of said mask matrix where said first vertex resides, wherein:if said first vertex resides within a region adjacent to a corner of said ROI, pinning said first vertex to a closest corner of said ROI, if said first

vertex resides within a region adjacent to a lateral edge of said ROI, pinning said first vertex to a closest lateral edge of said ROI; and

repeating said steps for all vertices of said first single loop polygon to correct for optical proximity.

14. (original) The method of claim 13 further including the steps of:

locating a lateral edge of said first single loop finite geometrical shape joining said first and second vertices; and

determining whether said lateral edge intersects said ROI at two pinned points.

15. (original) The method of claim 14 wherein it is determined that said lateral edge intersects said ROI at two points, the method further including the steps of:

assigning a first of said two pinned points to a first vertex of said second single loop finite geometrical shape within said ROI; and

assigning a second of said two pinned points to a second vertex of said second single loop finite geometrical shape within said ROI.

16. (original) The method of claim 14 wherein it is determined that said lateral edge does not intersect said ROI at two points, the method further including determining whether said first and second vertices reside in the same region of said mask matrix.

17. (original) The method of claim 16 further including the steps, wherein;

if said first and second vertices reside in the same region, proceeding to said step of repeating said steps for all vertices of said first single loop finite geometrical shape,

if said first and second vertices do not reside in the same region, determining whether said first and second vertices reside in adjacent regions of said mask matrix.

18. (original) The method of claim 17 further including the steps, wherein;

if said first and second vertices reside in adjacent regions of said mask matrix, proceeding to said step of repeating said steps for all vertices of said first single loop finite geometrical shape,

if said first and second vertices do not reside in adjacent regions of said mask matrix, determining whether said first and second vertices do not reside in adjacent regions of said mask matrix.

19. (original) The method of claim 18 further including the steps, wherein;

if it is determined that said first and second vertices are not, not residing in adjacent regions of said mask matrix, stopping said method due to an error,

if it is determined that said first and second vertices do not reside in adjacent regions of said mask matrix, then said lateral edge joining said first and second vertices resides outside said ROI and the method further includes the step of:

adding an additional vertex to a closest corner, with respect to said lateral edge joining said first and second vertices, of said boundary of said ROI.

20. (currently amended) A method of performing model-based optical proximity correction comprising:

providing a mask matrix having a region of interest (ROI) with a boundary;

locating a plurality of points of interest within said mask matrix;

computing a first single loop polygon having a plurality of vertices representative of said located plurality of points of interest;

pinning selected vertices of said plurality of vertices of said first single loop polygon to said boundary of said ROI to form a second single loop polygon on said ROI, said selected vertices of said plurality of vertices being pinned to said ROI based on a spatial relation of said selected vertices of said plurality of vertices with said ROI by:

locating first and second adjacent vertices of said first single loop polygon;

determining a location of each said first and second vertices within said matrix in relation to said ROI;

assigning said first vertex to a first vertex of said second single loop polygon when said locations of both said first and second vertices reside within said ROI; and

correcting for optical proximity using said second single loop polygon.

21. (original) The method of claim 20 wherein said located plurality of points of interest are representative of a group of polygons within said mask matrix such that said plurality of vertices of said first single loop polygon are representative of all vertices of said group of polygons.

22. (canceled)

23. (currently amended) The method of claim 20 wherein said location comprises said first vertex residing within said ROI and said second vertex residing outside said ROI, the method further including the steps of:

pinning said second vertex to a closest point of intersection with said boundary of said ROI;

assigning said first vertex to a first vertex of said second single loop polygon; and

assigning said second pinned vertex to a second vertex of said second single loop polygon.

24. (original) The method of claim 23 wherein said location comprises said first vertex residing outside said ROI and said second vertex residing within said ROI, the method further including the steps of:

pinning said first vertex to a closest point of intersection with said boundary of said ROI; and

assigning said first pinned vertex to a first vertex of said second single loop polygon.

25. (original) The method of claim 24 wherein said location comprises both said first and second vertices residing outside said ROI, the method further including the steps of:

determining a region of said mask matrix wherein said location of said first vertex resides;

pinning said first vertex to said boundary of said ROI based upon said region of said mask matrix where said first vertex resides, wherein:

if said first vertex resides within a region adjacent to a corner of said ROI, pinning said first vertex to a closest corner of said ROI,

if said first vertex resides within a region adjacent to a lateral edge of said ROI, pinning said first vertex to a closest lateral edge of said ROI;

locating a lateral edge of said first single loop polygon joining said first and second vertices; and

determining whether said lateral edge intersects said ROI at two points.

26. (original) The method of claim 25 wherein it is determined that said lateral edge intersects said ROI at two points, the method further including the steps of:

assigning a first of said two pinned points to a first vertex of said second single loop polygon on said ROI; and

assigning a second of said two pinned points to a second vertex of said second single loop polygon on said ROI.

27. (currently amended) The method of claim 26 wherein it is determined that said lateral edge does not intersect said ROI at two points, the method further including determining whether said first and second vertices reside in the same region of said mask matrix and;

wherein said first and second vertices reside in the same region,

locating a third vertex of said first single loop polygon,

repeating said steps for said second and third vertices of said first single loop polygon;

wherein said first and second vertices do not reside in the same region;

determining whether said first and second vertices reside in adjacent regions of said mask ~~matrix~~matrix.

28. (original) The method of claim 27 further including steps selected from the group of steps consisting of:

if it is determined that said first and second vertices do reside in adjacent regions of said mask matrix, proceeding to said second and third vertices of said first single loop polygon, and repeating said steps; and

if it is determined that said first and second vertices do not reside in adjacent regions of said mask matrix, determining whether said first and second vertices in fact do not reside in adjacent regions of said mask matrix;

if it is determined that said first and second vertices are not, not residing in adjacent regions of said mask matrix, stopping said method due to an error; and

if it is determined that said first and second vertices in fact do not reside in adjacent regions of said mask matrix, then said lateral edge joining said first and second vertices resides outside said ROI and the method further includes the step of:

adding an additional vertex to said second single loop polygon at a corner of said boundary of said ROI, said corner being a closest corner to said lateral edge.

29. (original) The method of claim 28 further including repeating said steps for all vertices of said first single loop polygon such that said second single loop polygon is collapsed on said boundary of and within said ROI.

30. (currently amended) A program storage device readable by a machine, tangibly embodying a program of instructions executable by the machine to perform method steps for performing model-based optical proximity correction, said method steps comprising:

providing a mask matrix having a region of interest (ROI) with a boundary;

locating a plurality of points of interest within said mask matrix;

computing a first single loop polygon having a plurality of vertices representative of said located plurality of points of interest;

using an algorithm, pinning selected vertices of said plurality of vertices of said first single loop polygon to said boundary of said ROI to form a second single loop polygon on said ROI, said selected vertices of said plurality of vertices being pinned to said ROI based on a spatial relation of said selected vertices of said plurality of vertices with said ROI by:

locating first and second adjacent vertices of said first single loop polygon;

determining a location of each said first and second vertices within said matrix in relation to said ROI;

assigning said first vertex to a first vertex of said second single loop polygon when said locations of both said first and second vertices reside within said ROI; and

correcting for optical proximity using said second single loop polygon.